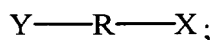


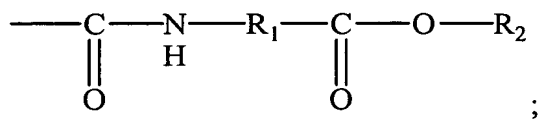
CLAIMS:

1. An ester amide composition of the formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, substituted aryl, aralkyl, alkaryl, or cycloalkyl;

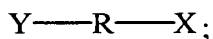
X is of the formula:



wherein R₁ and R₂ are independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups;

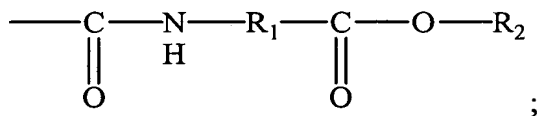
Y is independently selected from a group consisting of said X, COOR₃ group wherein R₃ independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups.

2. A method of making an ester amide composition of the formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

X is of the formula:

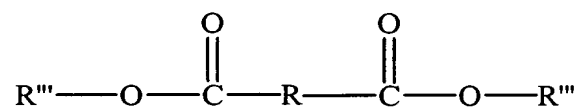


wherein R₁ and R₂ are independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups;

Y is independently selected from a group consisting of said X, COOR₃ group wherein R₃ independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups; said method comprising:

- a. heating a diester or a diacid with a chlorinating agent and a catalyst to form a first mixture;
- b. reacting said first mixture with an alkylaminoarylate and a second catalyst to form said ester amide.

3. The process of claim 2, wherein said diester is at least one selected from the group consisting of formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, substituted aryl, aralkyl, alkaryl, or cycloalkyl;

R''' is independently at least one selected from the group consisting of hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aryl groups.

The process of claim 3, wherein said R''' is independently at least one selected from the group consisting of hydrogen, substituted or unsubstituted alkyl groups containing about C1 to C15 carbon atoms.

4. The process of claim 2, wherein said chlorinating agent is at least one selected from the group consisting of phosphorous trichloride, phosphorous pentachloride, antimony chlorides, phosphorous oxy chloride, sulphuryl chloride, thionyl chloride, alkali and alkaline salts of hypochlorites, carbon tetrachloride, chloroform, salts of dichlorocyanurate, salts of trichlorocyanurate and mixtures thereof.

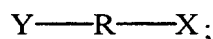
5. The process of claim 2, wherein said alkylaminoarylate is alkylaminobenzoate.

6. The process of claim 2, wherein said catalyst is at least one selected from the group consisting of nickel, palladium, rhodium catalyst, charcoal.

7. The process of claim 2, wherein said second catalyst is at least one selected from the group consisting of trialkyl ammonia, wherein the alkyl group is at least one selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl triethyl.

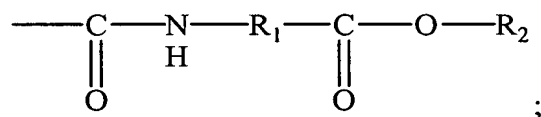
8. The process of claim 2, wherein said heating is carried out at a temperature in the range of between about 25 °C and about 90 °C.

9. A copolymer composition comprising: structural units derived from a substituted or unsubstituted diacid, a substituted or unsubstituted diol and an ester amide, wherein said ester amide comprises composition of the formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

X is of the formula:



wherein R₁ and R₂ are independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups;

Y is independently selected from a group consisting of said X, COOR₃ group wherein R₃ independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups.

10. The composition of claim 9, wherein said diol is at least one selected from the group consisting of straight chain, branched, or cycloaliphatic alkane diols containing about 2 to 20 carbon atoms.

11. The composition of claim 9, wherein said diol is at least one selected from the group consisting of ethylene glycol; propylene glycol, pentane diol; dipropylene glycol; 2-methyl-1,5-pentane diol; 1,6-hexane diol; dimethanol decalin, dimethanol bicyclo

octane; 1,4-cyclohexane dimethanol and particularly its cis- and trans-isomers; triethylene glycol; 1,10- decane diol; and mixtures thereof.

12. The composition of claim 9, wherein said diacid is at least one selected from the group consisting of linear acids, cycloaliphatic acids, bicyclo aliphatic acids, decahydro naphthalene dicarboxylic acids, norbornene dicarboxylic acids, bicyclo octane dicarboxylic acids, 1,4-cyclohexanedicarboxylic acid, adipic acid, azelaic acid, dicarboxyl dodecanoic acid, and succinic acid, dialkyl esters, diaryl esters, anhydrides, salts, acid chlorides, acid bromides, and mixtures thereof.

13. The composition of claim 9, wherein said diacid is at least one selected from the group consisting of 1,4-cyclohexanedicarboxylic acid, dialkyl esters of 1,4-cyclohexanedicarboxylic acid and mixtures thereof.

14. The composition of claim 9, wherein said diacid is present in a range of between about 99 mole percent and about 70 mole percent.

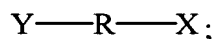
15. The composition of claim 9, wherein said esteramide is present in a range of between about 1 mole percent and about 30 mole percent.

16. The composition of claim 9, wherein said esteramide is present in range of between about 5 mole percent and about 25 mole percent.

17. The composition of claim 9, wherein said copolymer has molecular weight in the range between about 5000 to about 500,000.

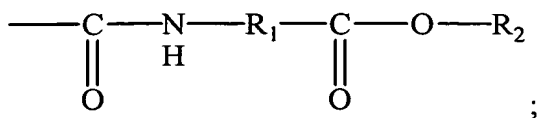
18. The composition of claim 9, wherein said composition has a glass transition temperature of between about 65 °C and about 130 °C.

19. A process to prepare a copolymer composition comprising: structural units derived from a substituted or unsubstituted diacid, a substituted or unsubstituted diol and an ester amide, wherein said ester amide comprises composition of the formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

X is of the formula:



wherein R₁ and R₂ are independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups;

Y is independently selected from a group consisting of said X, COOR₃ group wherein R₃ independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups; and wherein said process comprises

- a. mixing said diacid, diol and ester amide to form a first mixture;
- b. heating said first mixture in presence of a catalyst to form said copolymer.

20. The process of claim 19, wherein said diol is at least one selected from the group consisting of ethylene glycol; propylene glycol, pentane diol; dipropylene glycol; 2-methyl-1,5-pentane diol; 1,6-hexane diol; dimethanol decalin, dimethanol bicyclo octane; 1,4-cyclohexane dimethanol and particularly its cis- and trans-isomers; triethylene glycol; 1,10- decane diol; and mixtures thereof.

21. The process of claim 19, wherein said diacid is at least one selected from the group consisting of linear acids, cycloaliphatic acids, bicyclo aliphatic acids, decahydro naphthalene dicarboxylic acids, norbornene dicarboxylic acids, bicyclo octane dicarboxylic acids, 1,4-cyclohexanedicarboxylic acid, adipic acid, azelaic acid, dicarboxyl dodecanoic acid, and succinic acid, dialkyl esters, diaryl esters, anhydrides, salts, acid chlorides, acid bromides, and mixtures thereof.

22. The process of claim 19, wherein said catalyst is at least one selected from the group consisting of metal salts and chelates of tin, zinc, germanium, gallium, antimony, calcium, lithium, titanium and mixtures thereof.

23. The process of claim 19, wherein said catalyst is at least one selected from the group consisting of titanium alkoxides dialkyl tin compounds, diacetate and oxides salts

of magnesium, diacetate and oxides salts of calcium, diacetate and oxides salts of germanium, diacetate and oxides salts of zinc, diacetate and oxides salts of antimony.

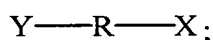
24. The process of claim 19, wherein said catalyst is present in a range of between about 10 and about 500 parts per million.

25. The process of claim 19, wherein said heating is carried out at a temperature between about 150 °C and about 280 °C.

26. The process of claim 19, wherein said mixing is carried out in presence of a solvent.

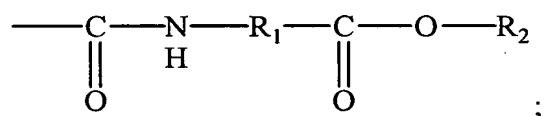
27. The process of claim 19, wherein said solvent is at least one selected from the group consisting of amide solvents, methylene chloride, chloroform, dichlororethane, tetrahydrofuran, diethylether, dioxane, benzene, toluene, dichlorobenzene, chlorobenzene and mixtures thereof.

28. A thermoplastic resin composition comprising: structural units derived from a substituted or unsubstituted polycarbonate and a copolymer composition comprising: structural units derived from a substituted or unsubstituted diacid, a substituted or unsubstituted diol and an ester amide, wherein said ester amide comprises composition of the formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

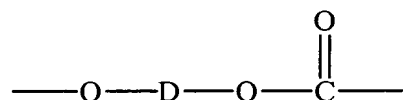
X is of the formula:



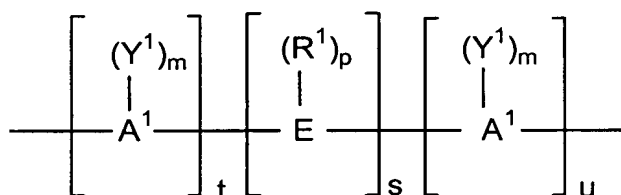
wherein R₁ and R₂ are independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups;

Y is independently selected from a group consisting of said X, COOR₃ group wherein R₃ independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups.

29. The composition of claim 28, wherein said polycarbonate comprises repeating units of the formula:



wherein R¹ is a divalent aromatic radical derived from a dihydroxyaromatic compound of the formula HO-D-OH, wherein D has the structure of formula:



wherein A¹ represents an aromatic group; E comprises a sulfur-containing linkage, sulfide, sulfoxide, sulfone; a phosphorus-containing linkage, phosphinyl, phosphoryl; an ether linkage; a carbonyl group; a tertiary nitrogen group; a silicon-containing linkage; silane; siloxy; a cycloaliphatic group; cyclopentylidene, cyclohexylidene, 3,3,5-trimethylcyclohexylidene, methylcyclohexylidene, 2-[2.2.1]-bicycloheptylidene, neopentylidene, cyclopentadecylidene, cyclododecylidene, adamantylidene; an alkylene or alkylidene group, which group may optionally be part of one or more fused rings attached to one or more aromatic groups bearing one hydroxy substituent; an unsaturated alkylidene group; or two or more alkylene or alkylidene groups connected by a moiety different from alkylene or alkylidene and selected from the group consisting of an aromatic linkage, a tertiary nitrogen linkage; an ether linkage; a carbonyl linkage; a silicon-containing linkage, silane, siloxy; a sulfur-containing linkage, sulfide, sulfoxide, sulfone; a phosphorus-containing linkage, phosphinyl, and phosphoryl;

R¹ independently at each occurrence comprises a mono-valent hydrocarbon group, alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

Y¹ independently at each occurrence is selected from the group consisting of an inorganic atom, a halogen; an inorganic group, a nitro group; an organic group, a monovalent hydrocarbon group, alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, cycloalkyl, and an alkoxy group;

the letter "m" represents any integer from and including zero through the number of replaceable hydrogens on A¹ available for substitution;

the letter "p" represents an integer from and including zero through the number of replaceable hydrogens on E available for substitution;

the letter "t" represents an integer equal to at least one;

the letter "s" represents an integer equal to either zero or one; and

"u" represents any integer including zero.

30. The composition of claim 28, wherein the dihydroxyaromatic compound from which D is derived is bisphenol A.

31. The composition of claim 28, wherein said diol is at least one selected from the group consisting of straight chain, branched, or cycloaliphatic alkane diols containing about 2 to 20 carbon.

32. The composition of claim 28, wherein said diol is atoms ethylene glycol; propylene glycol, pentane diol; dipropylene glycol; 2-methyl-1,5-pentane diol; 1,6-hexane diol; dimethanol decalin, dimethanol bicyclo octane; 1,4-cyclohexane dimethanol and particularly its cis- and trans-isomers; triethylene glycol; 1,10- decane diol; and mixtures thereof.

33. The composition of claim 28, wherein said diacid is at least one selected from the group consisting of linear acids, cycloaliphatic acids, bicyclo aliphatic acids, decahydro naphthalene dicarboxylic acids, norbornene dicarboxylic acids, bicyclo octane dicarboxylic acids, 1,4-cyclohexanedicarboxylic acid, adipic acid, azelaic acid, dicarboxyl dodecanoic acid, and succinic acid, dialkyl esters, diaryl esters, anhydrides, salts, acid chlorides, acid bromides, and mixtures thereof.

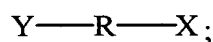
34. The composition of claim 28, wherein said diacid is 1,4-cyclohexanedicarboxylic acid, dialkyl esters of 1,4-cyclohexanedicarboxylic acid and mixtures thereof.

35. The composition of claim 28, wherein said thermoplastic resin composition comprises structural units derived from polyester and polycarbonate in a range of about 25 - 75 percent by weight of polyester and 75 - 25 percent by weight of polycarbonate.

36. The composition of claim 28, wherein said thermoplastic resin composition has a glass transition in the range of between about 70 °C and about 60 °C.

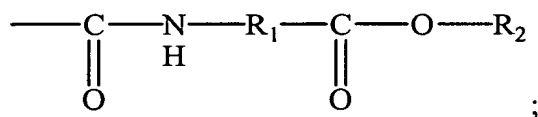
37. An article comprising the composition of claim 28.

38. A process to prepare a thermoplastic resin composition comprising: structural units derived from a substituted or unsubstituted polycarbonate and a copolymer composition comprising: structural units derived from a substituted or unsubstituted diacid, a substituted or unsubstituted diol and an ester amide, wherein said ester amide comprises composition of the formula:



wherein R is independently selected from the group consisting of a substituted or unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl;

X is of the formula:



wherein R₁ and R₂ are independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups;

Y is independently selected from a group consisting of said X, COOR₃ group wherein R₃ independently selected from the group consisting of a substituted and unsubstituted alkenyl, allyl, alkyl, aryl, aralkyl, alkaryl, or cycloalkyl groups, and wherein said process comprises:

- a. mixing the polycarbonate and copolymer to form a mixture
- b. heating said mixture to form (optically) clear thermoplastic resin composition.

39. The method according to claim 38, wherein said mixing may optionally be carried out at in temperature range between about 200 °C and about 300 °C.

40. The method according to claim 38, wherein said heating is carried out at in temperature range between about 210 °C and about 280 °C.

41. The process of claim 38, further comprises the addition of a stabilizing additive.

42. The process of claim 38, wherein said acidic stabilizing additive is selected from the group consisting of anti-oxidants, flame retardants, reinforcing materials, colorants, mold release agents, fillers, nucleating agents, UV light stabilizers, heat stabilizers, lubricants, antioxidants flame retardants, pigments or combinations thereof

43. The process of claim 38, wherein said stabilizing additive is present at a level from about 2 to about 30 percent by weight based on the total weight of said composition.

44. The process of claim 38, wherein said diol is selected from the group consisting of atoms ethylene glycol; propylene glycol, pentane diol; dipropylene glycol; 2-methyl-1,5-pentane diol; 1,6-hexane diol; dimethanol decalin, dimethanol bicyclo octane; 1,4-cyclohexane dimethanol and particularly its cis- and trans-isomers; triethylene glycol; 1,10- decane diol; and mixtures thereof.

45. The process of claim 38, wherein said diacid is selected from the group consisting of linear acids, cycloaliphatic acids, bicyclo aliphatic acids, decahydro naphthalene dicarboxylic acids, norbornene dicarboxylic acids, bicyclo octane dicarboxylic acids, 1,4-cyclohexanedicarboxylic acid, adipic acid, azelaic acid, dicarboxyl dodecanoic acid, and succinic acid, dialkyl esters, diaryl esters, anhydrides, salts, acid chlorides, acid bromides, and mixtures thereof.